PATENT SPECIFICATION

(11) 1 485 879

1 485 879

(21) Application No. 24556/74 (22) Filed 3 June 1974
(23) Complete Specification filed 29 May 1975
(44) Complete Specification published 14 Sept. 1977
(51) INT CL² B60Q 1/10
(52) Index at acceptance
F4R 806 807
H2H 2B2

(72) Inventor RICHARD ANTHONY EVISON

(19)

(54) IMPROVEMENTS IN OR RELATING TO VEHICLE HEAD LAMP SYSTEMS

(71) We, CHRYSLER UNITED KINGDOM LIMITED, a British Company, of Bowater House, 68 Knightbridge, London SW1X 7LH, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to vehicle headlamp systems.

The invention provides a vehicle headlamp system in which headlamps have main beam filaments, first dipped beam filaments and second dipped beam filaments to provide dipped beams angled downwardly at two different angles of dip with respect to the direction of the main beams to suit two differing laden conditions of the vehicle.

In one four headlamp system, both the outer and inner pairs of lamps may have main beam filaments and dipped beam filaments, the dipped beam filaments of said one pair of lamps being angled downwardly at a different dip angle to those of the other pair of lamps, the arrangement being such that selection of the dipped beam condition of either pair of lamps extinguishes the other pair of lamps.

In an alternative four headlamp system, the outer pair of lamps may each have a main beam filament and two dipped beam filaments providing the two different dipped beams whilst the inner pair of lamps may have main beam filaments only which extinguish when either of the dipped beam condition of the outer lamps is selected.

In the case of a two headlamp system, the lamps may each have a main beam filament and two dipped beam filaments arranged to provide said dipped beams at different angles.

In any of the above arrangements electric circuits may be provided for supplying electric current to the headlamps, said circuits including switch means for automatically selecting the first or second dipped beam filaments according to the laden condition of the vehicle.

Said switch means may be arranged to change over from one to the other dipped condition after a predetermined time delay.

More specifically the switch means may comprise a bi-metallic switch having a heating coil connected in a further electric circuit including a switch which is operated in response to the laden condition of the vehicle to open and close the further circuit.

The following is a description of some specific embodiments of the invention, reference being made to the accompanying drawings in which:

Figure 1 is a circuit diagram of a four headlamp system;

Figure 2 is a diagram of a similar system to that of Figure 1 but having different forms of headlamps;

Figure 3 is a circuit diagram of a two headlamp system; and,

Figure 4 is a circuit diagram of an alternative switching arrangement for use in any of the systems of Figures 1 to 3.

Referring firstly to Figure 1 of the drawings, there is shown a circuit diagram including four headlamps of which two referenced 10, are intended to be mounted at inner positions on the vehicle and two, referenced 11 are intended to be mounted in outer positions on the vehicle.

Each headlamp 10, 11 has a main filament 12 and the inner headlamps have dip filaments 13 and the outer headlamps have dip filaments 14. The dip filaments 14 of the outer headlamps are set to provide downwardly angled beams for a "normal" laden condition of the vehicle and the dip filaments 13 of the inner headlamps are set to provide more steeply angled beams to provide normally directed dipped beams when the vehicle is heavily laden particularly at the back. A power supply lead 15 from the positive terminal of a battery (not shown) is connected through a conventional on/off switch (also not shown)

to a dip switch 16. One pole 17 of the dip switch is connected by a lead 18 to one side of each of the main beam filaments. The other side of each filament is earthed in the usual way.

The other pole 19 of the dip switch is connected by a lead to two spaced input poles 20, 20*a* of a relay operated switch indicated generally at 21. The switch has two spaced output poles 22, 22*a* one of which is connected by a lead 23 to one side of the dip filaments 13 of the inner headlamps and the other of which is connected by a lead 24 to one side of the dip filaments 14 of the outer headlamps. The other sides of the dip filaments 13, 14 are earthed in conventional manner.

The relay coil 25 of the switch 21 is connected in the ignition circuit 26 of the vehicle. The circuit 26 includes a thermally operated bi-metallic switch 27 having a heater coil 28 connected in a branch 29 from a side light circuit. The circuit includes a load/height switch 30 which is positioned adjacent the rear suspension of the vehicle and is arranged to be closed when the rear part of the vehicle body is loaded down. When the load/height switch 30 is closed, the heating effect of the current passing through the coil 28 of the thermally operated switch causes the switch contacts to close thus energising the relay coil 25. The relay engages the poles 20*a*, 22*a* of the switch 21 to illuminate the steeply angled dip filaments 13. When the load/height switch is open, and the relay coil 25 is de-energised, a spring holds the contacts 20, 22 of relay switch 21 closed to energise the dip filaments 14 of the outer main beams. The coil 28 is arranged to take at least 5 seconds of a continuously passing current in the side light circuit to close the switch 27 so that normal changes in body height of the vehicle when travelling normally laden do not cause a change over from the normal to the more steeply angled dip filaments.

The embodiment of Figure 2 is similar to that of Figure 1 except that both the normal and more steeply angled dip filaments 13, 14 are incorporated in the outer headlamps 11 and no dip filaments are provided in the inner headlamps.

The embodiment of Figure 3 is similar to that of Figure 2 except that the inner headlamps are omitted.

Figure 4 of the drawings shows part of a circuit intended to replace the thermally operated bi-metallic switch 27 and the relay operated switch 21 in any of the above embodiments.

In place of the switch 27 there is a bi-metallic switch 31 having a heater coil 32 connected in a branch of the side lights circuit 29. The switch 31 is connected to the dip pole 19 of the dip switch 16 and a bi-metallic contact 33 is movable between two contacts 34, 35 according to its temperature connected to the normal dip filaments 14 or more steeply angled dip filaments 13. The side lights circuit branch 29 includes the load/height switch 30 as in the earlier described embodiments to be closed when the rear of the vehicle is heavily laden and, by the heating effect of the coil 32 to change over the bi-metallic contact of switch 31 to illuminate the more steeply angled dip filaments 13.

The embodiments described herein relate to vehicles having a load capacity at the rear. For vehicles having a load capacity at the front, it will be obvious that the laden vehicle dip angle for the lamps will be less than the unladen vehicle dip angle and the vehicle height sensitive switch may be located on or adjacent the front suspension to respond to variation between the front part of the body and the front suspension.

WHAT WE CLAIM IS:—

1. A vehicle headlamp system in which headlamps have main beam filaments, first dipped beam filaments and second dipped beam filaments to provide dipped beams angled downwardly at two different angles of dip with respect to the direction of the main beams to suit two differing laden conditions of the vehicle.

2. A system as claimed in claim 1 and in the case of a four headlamp system wherein both the outer and inner pairs of lamps have main beam filaments and dipped beam filaments, the dipped beam filaments of said one pair of lamps being angled downwardly at a different dip angle to those of the other pair of lamps the arrangement being such that selection of the dipped beam condition of either pair of lamps extinguishes the other pair of lamps.

3. A system as claimed in claim 1 and in the case of a four headlamp system, wherein the outer pair of lamps each has a main beam filament and two dipped beam filaments providing the two different dipped beams whilst the inner pair of lamps have main beam filaments only which extinguish when either of the dipped beam condition of the outer lamps is selected.

4. A system as claimed in claim 1 and in the case of a two headlamp system wherein the lamps each have a main beam filament and two dipped beam filaments arranged to provide said dipped beams at different angles.

5. A system as claimed in any of the preceding claims wherein electric circuits are provided for supplying electric current to the headlamps, said circuits including switch means for automatically selecting the first or second dipped beam filaments

according to the laden condition of the vehicle.

6. A system as claimed in claim 5 wherein said switch means are arranged to change over from one to the other dipped condition after a predetermined time delay.

7. A system as claimed in claim 6 wherein the switch means comprise a bi-metallic switch having a heating coil connected in a further electric circuit including a switch which is operated in response to the laden condition of the vehicle to open and close the further circuit.

8. A vehicle headlamp system subtantially as described with reference to and as illustrated in Figures 1, 2, 3 or any of Figures 1 to 3 as modified by Figure 4.

BOULT, WADE & TENNANT,
Chartered Patent Agents,
34 Cursitor Street,
London EC4A 1PQ.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1977.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

1485879 COMPLETE SPECIFICATION
2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 1

FIG.1

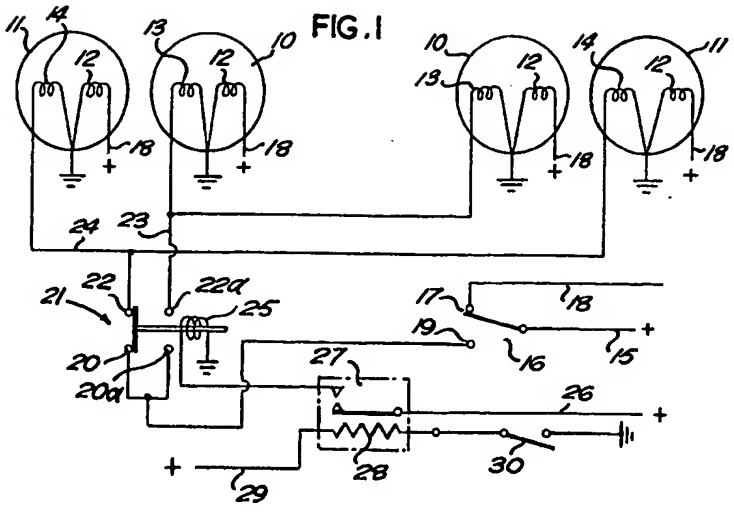


FIG.2

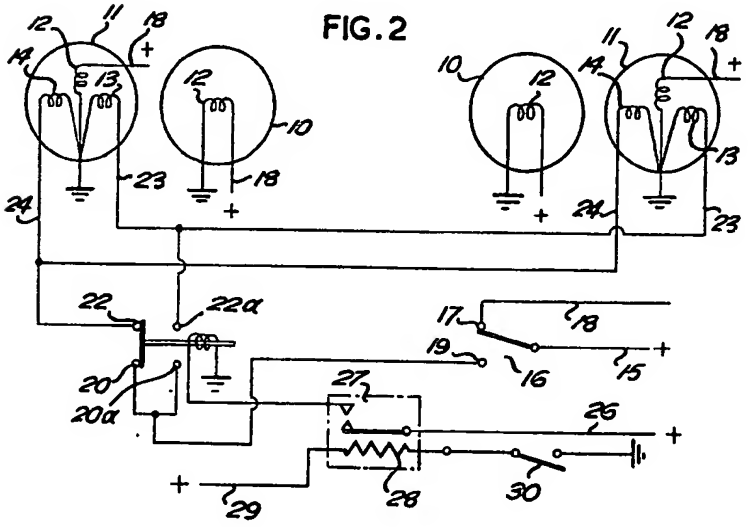


FIG.3

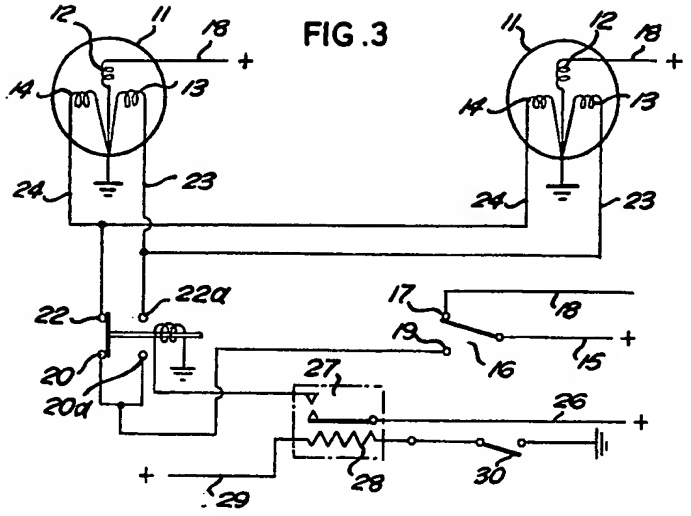
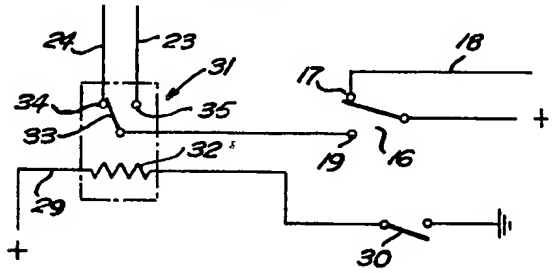

12
11
18
+
14
13
24
23
22
22a
17
18
19
16
15
20
20a
27
26
28
30
29

FIG.4


24
23
31
18
17
34
35
33
32
19
16
29
30
+